



PCT10

RAW SEQUENCE LISTING

DATE: 05/21/2002

PATENT APPLICATION: US/10/018,009

TIME: 15:49:28

Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

Does Not Comply
Corrected Diskette Needed

3 <110> APPLICANT: DSM N.V.

5 <120> TITLE OF INVENTION: Genes encoding enzymes in the biosynthesis of pimaricin and applications

6 thereof

8 <130> FILE REFERENCE: S-2959

10 <140> CURRENT APPLICATION NUMBER: US/10/018,009
 11 <141> CURRENT FILING DATE: 2002-04-16

13 <160> NUMBER OF SEQ ID NOS: 14

15 <170> SOFTWARE: PatentIn Ver. 2.1

ERRORED SEQUENCES

492 <210> SEQ ID NO: 2
 493 <211> LENGTH: 1848
 494 <212> TYPE: PRT
 495 <213> ORGANISM: Streptomyces natalensis
 497 <400> SEQUENCE: 2

498 Met Val Pro Val His Thr Asp Asp Tyr Ala Ile Gln Pro Pro Ala Asp
 499 1 5 10 15
 501 Thr Ala His Gly Gly Gly Phe Thr Leu Pro Ala Val Phe Glu Ala
 502 20 25 30
 504 Ala Val Glu Ser Ala Pro Asp Ala Val Ala Leu Val Asp Gly Thr Val
 505 35 40 45
 507 Pro Gly Pro Gly Arg Met Trp Arg Ala Asp Val Asp Ala Leu Ala Arg
 508 50 55 60
 510 Gly Leu Gln Glu Ser Gly Ile Ala Pro Gly Asp Val Val Ala Val Arg
 511 65 70 75 80
 513 Leu Pro Asn Cys Gly Arg Phe Pro Thr Leu His Leu Ala Val Ala Ala
 514 85 90 95
 516 Val Gly Ala Val Leu Leu Pro Ile His Gln Gly Thr Pro Leu Pro Glu
 517 100 105 110
 519 Val Asp Ala Leu Leu Thr Arg Ala Glu Pro Ala Leu Leu Val Leu Ser
 520 115 120 125
 522 Ala Ala Gly Ser Asp Gly Leu Ala Thr Ala Arg Ser Leu Leu Glu Ser
 523 130 135 140
 525 Val Pro Ser Leu Arg Gly Val Leu Leu Ala Gly Ala Ser Gly Asp Gly
 526 145 150 155 160
 528 Glu Ser Gly Ser Val Gly Gly Gly Glu Ser Gly Ser Gly Arg Arg Ser
 529 165 170 175
 531 Leu Asp Gly Leu Leu Ala Gly Trp Ala Gly Ser Gly Pro Arg Pro Val
 532 180 185 190
 534 Asp Val Thr Pro Asp Met Pro Leu Val Leu Val Pro Ser Ser Gly Thr
 535 195 200 205

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Input Set : N:\jumbos\huge\10018009.raw

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```

537 Val Ser Ala Arg Pro Lys Leu Cys Val His Ser His Asp Gly Leu Leu
538      210                215                220
540 Ser Asn Thr Ala Ala Val Thr Ala Glu Ala Ala Asp Ala Phe Asp Gly
541 225                230                235                240
543 Pro Val Leu Thr Ala Cys Pro Met Thr His Leu Phe Gly Leu Gln Ser
544      245                250                255
546 Leu His Ala Ala Leu Phe Ala Ala Cys Thr Gln Val Leu Leu Thr Gly
547      260                265                270
549 Trp Asp Val Asp Arg Phe Leu Glu Gln Ala Arg Glu His Gly Pro Arg
550      275                280                285
552 Val Val Phe Ala Val Pro Ala Gln Leu Arg Asp Val Val Thr Arg Leu
553      290                295                300
555 Ala Arg Thr Gly Glu Pro Ala Gly Phe Thr Pro Tyr Gln Val Arg Thr
556 305                310                315                320
558 Ala Gly Ala Ala Val Ala Pro Ala Leu Ala Val Arg Val Arg Ala Val
559      325                330                335
561 Leu Asp Cys Glu Leu Val Val Val Trp Gly Met Ser Glu Ile Gly Thr
562      340                345                350
564 Gly Thr Arg Thr Arg Ala His His Pro Asp Gly Cys Val Gly Glu Pro
565      355                360                365
567 Val Ser Gly Val Asp Val Arg Val Val Asp Glu His Gly Gln Glu Cys
568      370                375                380
570 Ala Ala Asp Glu Arg Gly Glu Leu Gln Tyr Arg Gly Pro Gly Leu Phe
571 385                390                395                400
573 Arg Gly Tyr Phe Arg Glu Pro Glu Leu Thr Arg Ser Ala Leu Thr Asp
574      405                410                415
576 Asp Gly Trp Leu Arg Thr Gly Asp Leu Ala Thr Val Asp Ala Asp Gly
577      420                425                430
579 Val Val Val Leu His Gly Arg Ala Ala Glu Leu Ile Asn Thr Gly Gly
580      435                440                445
582 Arg Lys Phe Ser Ala Gly Glu Val Glu Gly Leu Leu Ser Gly Phe Thr
583      450                455                460
585 Asp Leu Gly Pro Leu Ala Val Val Gly Ala Pro Asp Asp Arg Leu Gly
586 465                470                475                480
588 Glu Tyr Pro Cys Leu Val Val Thr Asp His Ala Asp Gly Thr Ile Gly
589      485                490                495
591 Leu Ser Glu Val Thr Ala Phe Leu Arg Arg Leu Gly Leu Ala Asp His
592      500                505                510
594 Lys Ile Pro Leu Glu Leu Val Thr Val Arg Glu Leu Pro Phe Ser Pro
595      515                520                525
597 Ala Gly Lys Leu Asp Arg Gly Ala Leu Lys Arg Leu Leu Ala Asn Leu
598      530                535                540
600 Ala Glu Val Ser Val Pro Ala Arg Leu Gly Ala Val Pro Pro Tyr Thr
601 545                550                555                560
603 Ala Glu Glu Ala Leu Asp Leu Val Arg Asp Cys Val Gly Arg Val Leu
604      565                570                575
606 Arg Tyr Gly Gly Ala Ala Val Pro Phe Pro Pro Asp Lys Asp Phe Phe
607      580                585                590
609 Ser Pro Asp Lys Asp Phe Arg Gln Leu Gly Leu Asp Ser Ile Gly Ala

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```

610          595          600          605
612 Val Arg Leu Arg Asn Leu Leu Arg Glu Glu Thr Gly Leu Pro Leu Pro
613          610          615          620
615 Ala Thr Leu Ala Phe Asp Ser Pro Thr Pro Arg Ala Val Ala Arg Val
616 625          630          635          640
618 Leu Ala Glu Gln Glu Pro Ser Gln Asp Glu Pro Arg Glu Asn Pro
619          645          650          655
621 Ala Asp Gly Ala Asp Pro Val Ala Ile Val Gly Met Ala Cys Arg Leu
622          660          665          670
624 Pro Gly Gly Ala Asp Ser Pro Asp Ala Leu Trp Glu Leu Leu Ala Asp
625          675          680          685
627 Gly Thr Asp Ala Met Ser Pro Phe Pro Thr Asp Arg Gly Trp Asp Leu
628          690          695          700
630 Asp Arg Leu Phe Asp Glu Asp Ala Asp Arg Pro Gly Thr Ser Tyr Ala
631 705          710          715          720
633 Arg Glu Gly Gly Phe Leu His Asp Ala Gly Asp Phe Asp Ala Gly Phe
634          725          730          735
636 Phe Gly Leu Ser Asp Gln Glu Ala Thr Ala Thr Asp Pro Gln Gln Arg
637          740          745          750
639 Leu Leu Leu Glu Ala Ala Trp Glu Thr Phe Glu Arg Ala Gly Ile Asp
640          755          760          765
642 Pro Gln Ser Leu Arg Gly Ser Arg Thr Gly Val Phe Thr Gly Ala Met
643          770          775          780
645 Asp Arg Gly Tyr Gly Thr Ser Ala Ser Ala Ala Pro Ser Ala Trp Glu
646 785          790          795          800
648 Ser Met Leu Ile Thr Gly Thr Ala Gly Ser Ala Val Ser Gly Arg Ile
649          805          810          815
651 Ala Tyr Thr Tyr Gly Leu Glu Gly Pro Ala Leu Thr Val Asp Thr Ala
652          820          825          830
654 Ser Ser Ser Ser Leu Val Ala Leu His Leu Ala Cys Arg Ser Leu Arg
655          835          840          845
657 Ser Gly Glu Thr Asp Leu Ala Leu Ala Gly Gly Val Thr Val Met Ala
658          850          855          860
660 Thr Pro Ala Pro Phe Ala His Phe Ser Arg Leu Arg Ala Leu Ser Pro
661 865          870          875          880
663 Asp Ser Arg Ser Met Ala Tyr Ala Asp Ala Ala Asn Gly Ser Ala Trp
664          885          890          895
666 Ser Glu Gly Ala Gly Leu Leu Leu Leu Glu Arg Leu Ser Asp Ala Arg
667          900          905          910
669 Arg Asn Gly His Arg Val Leu Ala Leu Val Arg Gly Ser Ala Val Asn
670          915          920          925
672 Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Ser Gly Pro Ala Gln
673          930          935          940
675 Gln Arg Val Ile Arg Gln Ala Leu Ala Asp Ala Gly Leu Thr Pro Gln
676 945          950          955          960
678 Asp Val Asp Ala Val Glu Gly His Gly Thr Gly Thr Pro Leu Gly Asp
679          965          970          975
681 Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Gln Arg Pro
682          980          985          990

```

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```

684 Val Glu Arg Pro Leu Trp Leu Gly Ser Val Lys Ser Asn Phe Gly His
685          995          1000          1005
687 Thr Gln Ala Ala Ala Gly Val Val Gly Val Ile Lys Thr Val Leu Ala
688    1010          1015          1020
690 Leu Arg His Gly Val Leu Pro Gln Thr Leu His Val Asp Ala Pro Ser
E--> 691 1025 1025          1030          1035          1040
693 Ala Lys Val Asp Trp Ser Ala Gly Ser Val Arg Leu Leu Thr Glu Ala
694          1045          1050          1055
696 Arg Pro Trp Pro Arg Glu Ser Gly Arg Thr Arg Arg Ala Gly Val Ser
697          1060          1065          1070
699 Ser Phe Gly Leu Thr Gly Thr Asn Ala His Val Ile Leu Glu Glu Ala
700          1075          1080          1085
702 Pro Gly Glu Ala Ala Ala Gly Ala Arg Ala Glu Val Pro Glu Glu Ala
703    1090          1095          1100
705 Arg Cys Ala Ser Ser Pro Ala Arg Leu Pro Glu Pro Pro Gly Asp Ala
E--> 706 105 1110          1115          1120
708 Ala Ala Pro Trp Val Leu Ser Ala Arg Ser Arg Ala Ala Leu Arg Ala
709          1125          1130          1135
711 Gln Ala Leu Arg Leu Ala Asp Gln Val Ala Ala Asp Pro Gly Leu Arg
712          1140          1145          1150
714 Ala Gln Asp Val Ala His Ala Leu Ala Thr Ser Arg Thr Leu His Arg
715          1155          1160          1165
717 His Arg Ala Val Val Ser Gly Ser Asp Arg Ala Gln Met Leu Ala Ala
718    1170          1175          1180
720 Ala Lys Arg Phe Gly Leu Gly Glu Arg Thr Ala Gly Val Thr Pro Asp
E--> 721 185 1190          1195          1200
723 Asp Ser Ala Pro Gly Leu Leu Ala Phe Val Phe Ser Gly Gln Gly Ser
724          1205          1210          1215
726 Gln Arg Ser Gly Met Gly Arg Ala Ala Ala Glu Ala Phe Pro Val Phe
727          1220          1225          1230
729 Gly Arg Ala Leu Gly Glu Val Cys Ala Ala Leu Asp Pro Leu Leu Thr
730          1235          1240          1245
732 Arg Pro Leu Thr Ser Val Met Trp Ala Ala Pro Gly Ser Glu Glu Ala
733    1250          1255          1260
735 Ala Arg Leu Asp Asp Thr Thr Tyr Thr Gln Pro Ala Leu Phe Ala Val
E--> 736 265 1270          1275          1280
738 Gln Val Ala Leu Tyr Arg Leu Phe Glu Ser Trp Gly Val Val Pro Asp
739          1285          1290          1295
741 Gln Leu Val Gly His Ser Val Gly Glu Ile Ser Ala Ala His Val Ala
742          1300          1305          1310
744 Gly Val Leu Gly Leu Arg Asp Ala Cys Thr Leu Val Ala Ala Arg Ser
745          1315          1320          1325
747 Arg Leu Met Gly Ala Leu Pro Pro Gly Gly Ala Met Val Ala Val Arg
748    1330          1335          1340
750 Ile Thr Glu Pro Glu Val Thr Pro Trp Leu Ala Glu Leu Thr Asp Glu
E--> 751 345 1350          1355          1360
753 Val Ser Ile Ala Ala Val Asn Gly Pro His Ser Leu Val Leu Ala Gly
754          1365          1370          1375
756 Ala Glu Ala Pro Leu Val Ala Leu Thr Asp Arg Leu Ala Ala Ala Gly

```

(global error)

When numbering the first amino acid on a line, begin the number directly under the first letter of the amino acid. Leave a space after the entire number.

e.g. Leu | 5 | Arg
1025 | space |

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```

757          1380          1385          1390
759 His Lys Thr Arg Arg Leu Met Val Ser Thr Ala Pro His Ser Pro Leu
760          1395          1400          1405
762 Met Asp Pro Met Leu Glu Glu Phe Arg Ala Val Val Arg Thr Leu Ser
763          1410          1415          1420
765 Tyr Ala Ala Pro Ala Val Pro Leu Val Ser Thr Val Thr Gly Arg Pro
E--> 766 425          1430          1435          1440
768 Leu Thr Gly Glu Glu Ala Arg Asp Pro Asp His Trp Val Arg His Val
769          1445          1450          1455
771 Arg Gln Ser Val Arg Phe Lys Asp Ala Ile Gly Arg Leu Arg Asp Glu
772          1460          1465          1470
774 Arg Val Thr Gly Phe Leu Glu Leu Gly Ala Glu Pro Ala Leu Thr Pro
775          1475          1480          1485
777 Met Ile Asp Glu Cys Leu Glu Ser Ala Asp Gly Gln Pro Gly Thr Ala
778          1490          1495          1500
780 Leu Val Pro Ser Leu Arg Ala Gly Val Pro Glu Arg Asp Ala Leu Leu
E--> 781 505          1510          1515          1520
783 Thr Ala Val Ala Arg Val His Ala Gln Gly Val Pro Val Asp Trp Asp
784          1525          1530          1535
786 Ala Val Leu Pro Gly Ala Glu Ala Ser Val Thr Val Arg Gly Leu Pro
787          1540          1545          1550
789 Ala Ala Asp Arg Gln Trp Phe Arg Phe Val Pro Asp Gln Gly Ala Pro
790          1555          1560          1565
792 Leu Thr Leu Ala Asp Arg Ser Leu His Leu Glu Gly Ala Ala His Leu
793          1570          1575          1580
795 Arg Asp Val Gly Gly Cys Arg Thr Ala Asp Gly Arg Trp Val Lys Met
E--> 796 585          1590          1595          1600
798 Gly Val Leu Tyr Arg Thr Asn Asn Leu His Ala Leu Thr Asp Ala Asp
799          1605          1610          1615
801 Leu Ala Lys Leu Gln Arg Leu Gly Ile Arg Thr Asp Phe Asp Leu Arg
802          1620          1625          1630
804 Met Pro Gly Glu Arg Ala Lys Ala Pro Asn Arg Val Pro Thr Gly Ala
805          1635          1640          1645
807 Arg Tyr Ile Val Ala Asp Ala Phe Asp Ala His Leu Arg Asp Gly Leu
808          1650          1655          1660
810 Ser Leu Ser Glu Arg Asp Leu Glu Arg Leu Arg Glu Ala Arg Leu Ser
E--> 811 665          1670          1675          1680
813 Gly Leu Asp Glu Ala Glu Gln His Ala Leu Val Leu Ala Leu Val Leu
814          1685          1690          1695
816 Ala Glu Thr Ser Ala Val Leu Gly Gly Gln Glu Thr Pro Gly Glu Glu
817          1700          1705          1710
819 Pro His Gly Glu Glu Gly His Arg Thr Phe Lys Glu Met Gly Ile Asn
820          1715          1720          1725
822 Ser Leu Asn Ala Val Glu Leu Arg Asn Arg Leu Ile Ala Ala Thr Asp
823          1730          1735          1740
825 Leu Arg Leu Pro Ala Thr Leu Val Tyr Asp Tyr Pro Thr Pro Lys Ala
E--> 826 745          1750          1755          1760
828 Val Val Arg Leu Val Arg Glu Arg Leu Ala Arg Pro Ala Ser Pro Ala
829          1765          1770          1775

```

*same
error*

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831 Arg Asp Val Ala Ser Val Val Ala Glu Leu Glu Ser Leu Leu Thr Ala
832 1780 1785 1790
834 Gly Ala Glu Val Ser Glu Glu Thr Ala Ala Arg Leu Lys Ala Val Thr
835 1795 1800 1805
837 Ala Val Ser Thr Gly Thr Thr Gly Ser Gly Ser Gly Thr Gly Ala Gly
838 1810 1815 1820
840 Ser Gly Gly Ala Leu Asp Leu Val Ser Ala Ser Asp Glu Glu Leu Phe
E--> 841 825 1830 1835 1840
843 Arg Leu Met Asp Ala Glu Ser
E--> 844 1845
2558 <210> SEQ ID NO: 4
2559 <211> LENGTH: 6798
2560 <212> TYPE: PRT
2561 <213> ORGANISM: Streptomyces natalensis
2563 <400> SEQUENCE: 4
2564 Met Ser Asn Glu Glu Lys Leu Arg Glu Tyr Leu Lys Arg Ala Ile Ala
2565 1 5 10 15
2567 Asp Leu His Glu Thr Arg Gln Gln Leu Asp Glu Thr Glu Ala Lys Gln
2568 20 25 30
2570 Arg Glu Pro Leu Ala Ile Val Ser Met Ala Cys Arg Phe Pro Gly Gly
2571 35 40 45
2573 Val Arg Ser Pro Glu Glu Leu Trp Glu Leu Leu Arg Asp Gly Val Asp
2574 50 55 60
2576 Ala Val Ser Ser Phe Pro Arg Asn Arg Gly Trp Asp Leu Asp Ala Leu
2577 65 70 75 80
2579 Tyr His Ser Asp Pro Ala His Gln Gly Thr Ser Tyr Ala Arg Glu Gly
2580 85 90 95
2582 Gly Phe Leu His Asp Ala Gly Glu Phe Asp Pro Gly Phe Phe Gly Ile
2583 100 105 110
2585 Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu
2586 115 120 125
2588 Glu Thr Ala Trp Glu Ala Val Glu Arg Ala Gly Ile Asp Pro Glu Ser
2589 130 135 140
2591 Leu Ala Gly Ser Arg Thr Gly Val Phe Val Gly Thr Gly His Gly Gly
2592 145 150 155 160
2594 Tyr Asp Ala Glu Gly Arg Arg Arg Ala Asp Glu Val Gly Gly His Leu
2595 165 170 175
2597 Leu Thr Gly Asn His Ile Ser Ile Ala Ser Gly Arg Ile Ser Tyr Val
2598 180 185 190
2600 Leu Gly Leu Glu Gly Pro Ala Leu Thr Val Asp Thr Ala Cys Ser Ser
2601 195 200 205
2603 Ser Leu Val Ala Leu His Leu Ala Met His Ala Leu Arg Arg Asp Glu
2604 210 215 220
2606 Cys Ala Met Ala Leu Val Gly Gly Ala Thr Val Met Ser Thr Pro Gln
2607 225 230 235 240
2609 Met Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg
2610 245 250 255
2612 Cys Lys Pro Phe Ala Ala Ala Ala Asp Gly Thr Gly Trp Ser Glu Gly
2613 260 265 270

same

← last
amino
acid at 1847

pp 8-23

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```

2615 Val Gly Leu Leu Leu Val Glu Arg Leu Ser Asp Ala Val Arg Asn Gly
2616           275           280           285
2618 Tyr Pro Val Leu Ala Val Leu Lys Gly Ser Ala Val Asn Gln Asp Gly
2619           290           295           300
2621 Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val
2622 305           310           315           320
2624 Ile Arg Gln Ala Leu Thr Gly Ala Gly Leu Ala Ala Ser Asp Ile Asp
2625           325           330           335
2627 Ala Val Glu Ala His Gly Thr Gly Thr Leu Gly Asp Pro Val Glu
2628           340           345           350
2630 Ala His Ala Leu Leu Ala Thr Tyr Gly Gln Gln Arg Ala Ala Asp Arg
2631           355           360           365
2633 Pro Cys Gly Leu Gly Ser Met Lys Ser Asn Ile Gly His Thr Gln Ala
2634           370           375           380
2636 Ala Ala Gly Ile Ala Gly Val Met Lys Met Val Leu Ala Met Arg His
2637 385           390           395           400
2639 Gly His Leu Pro Arg Thr Leu His Leu Asp Glu Pro Thr Gly His Val
2640           405           410           415
2642 Asp Trp Ser Glu Gly Asn Ala Arg Leu Leu Ala Glu Pro Glu Pro Trp
2643           420           425           430
2645 Pro Ser Ala Gly Arg Pro Arg Arg Ala Ala Val Ser Ser Phe Gly Ile
2646           435           440           445
2648 Ser Gly Thr Asn Ala His Val Ile Leu Glu Gln Ala Pro Ala His Glu
2649           450           455           460
2651 Ala Glu Pro Ala Pro Glu Pro Ala Ala Arg Pro Gly Ala Leu Pro Trp
2652 465           470           475           480
2654 Ile Leu Ser Ala Arg Thr Glu Ala Gly Leu Arg Ala Gln Ala Asp Arg
2655           485           490           495
2657 Leu Gly Arg His Leu Arg Asp Arg Ala Asp Leu Glu Pro Ala Ala Val
2658           500           505           510
2660 Ala His Ala Leu Ala Asp Thr Arg Thr Leu Met Glu His Arg Ala Val
2661           515           520           525
2663 Val Val Ala Gly Asp Arg Glu Glu Phe Leu Arg Gly Leu Asp Ala Leu
2664           530           535           540
2666 Ala Ala Gly Arg Thr Ala Asn Gly Leu Val Ser Gly Val Ala Val Lys
2667 545           550           555           560
2669 Ala Ala Ser Ala Phe Leu Phe Ala Gly Gln Gly Ser Gln Arg Pro Gly
2670           565           570           575
2672 Met Gly Arg Glu Leu His Ala Ala His Pro Val Phe Ala Thr Ala Phe
2673           580           585           590
2675 Asp Ala Val Cys Ala Glu Leu Asp Pro His Leu Asp Arg Pro Leu Arg
2676           595           600           605
2678 Asp Ile Val Phe Ala Glu Glu Gly Ser Ala Glu Ala Ala Leu Leu Asp
2679           610           615           620
2681 Gln Thr Ala Tyr Thr Gln Ala Ala Leu Phe Ala Leu Glu Thr Ala Leu
2682 625           630           635           640
2684 Phe Arg Leu Val Glu Ser Trp Gly Val Ala Pro Arg Phe Val Ala Gly
2685           645           650           655
2687 His Ser Ile Gly Glu Leu Thr Ala Ala His Val Ser Gly Val Leu Thr

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2688 660 665 670
 2690 Leu His Asp Ala Ala Arg Leu Val Ala Ala Arg Gly Thr Leu Met Gln
 2691 675 680 685
 2693 Ala Leu Pro Ala Gly Gly Ala Met Val Ala Val Gln Ala Thr Glu Asp
 2694 690 695 700
 2696 Glu Ile Arg Glu Arg Leu Ala Gly His Glu Asp His Val Ala Leu Ala
 2697 705 710 715 720
 2699 Ala Ala Asn Gly Pro Asp Ser Thr Val Ile Ser Gly Asp Glu Gln Ala
 2700 725 730 735
 2702 Val Thr Glu Ile Ala Ala His Trp Glu Ala Gln Gly Arg Arg Thr Lys
 2703 740 745 750
 2705 Arg Leu Arg Val Ser His Ala Phe His Ser Pro His Met Asp Asp Met
 2706 755 760 765
 2708 Leu Glu Asp Phe Arg Arg Val Ala Arg Gly Leu Thr Phe His Ala Pro
 2709 770 775 780
 2711 Arg Ile Pro Val Val Ser Thr Val Thr Gly Ala Leu Ala Thr Glu Asp
 2712 785 790 795 800
 2714 Glu Leu Arg Ser Pro Asp Tyr Trp Val Arg Gln Val Arg Glu Thr Val
 2715 805 810 815
 2717 Arg Phe Cys Ala Ala Val Arg Thr Leu Glu Ala Glu Gly Val Thr Thr
 2718 820 825 830
 2720 Phe Val Glu Ile Gly Thr Gly Gly Val Leu Thr Pro Met Val Gln Asp
 2721 835 840 845
 2723 Cys Leu Thr Thr Leu Glu Glu Pro Val Leu Val Pro Leu Leu Arg Thr
 2724 850 855 860
 2726 Gly Arg Pro Glu Thr Val Ala Leu Thr Glu Gly Val Ala Thr Ala Phe
 2727 865 870 875 880
 2729 Val His Gly Val Pro Val Asp Arg Ser Ala Phe Pro Gly Ala Pro Gly
 2730 885 890 895
 2732 Thr Ser Arg Ala Asp Leu Pro Thr Tyr Ala Phe Gln Arg Gln Trp Tyr
 2733 900 905 910
 2735 Trp Leu Asp Pro Ala Asp His Asp Glu Gly Glu Ala Ala Ala Ala Glu
 2736 915 920 925
 2738 Ala Gly Glu Ala Gly Phe Trp Ala Ala Val Glu Arg Glu Asp Leu Gln
 2739 930 935 940
 2741 Glu Leu Ser Ala Val Leu Ala Ile Asp Gly Ser Glu Ala Asp Ser Leu
 2742 945 950 955 960
 2744 Gly Ser Phe Leu Pro Thr Leu Ser Ser Trp Arg Arg Gln Arg Arg Thr
 2745 965 970 975
 2747 Gln Ala Ala Ala Asp Arg Phe Ser Tyr Arg Thr His Trp Ala Pro Arg
 2748 980 985 990
 2750 Thr Ala Ser Gly Gly Pro Thr Ala Thr Gly His Trp Leu Val Val Leu
 2751 995 1000 1005
 2753 Pro Glu Gly Gly Thr Asp Asp Pro Trp Thr Ala Arg Leu Leu Asp Ala
 2754 1010 1015 1020
 2756 Leu Asn Asp Gln Gly Leu His Thr Asp Val Arg Glu Leu Pro Ala Asp
 E--> 2757 025/025 1030 1035 1040
 2759 His Glu Pro Asp Ala Trp Gly Arg His Pro Val Asp Gly Val Leu Cys
 2760 1045 1050 1055

← same
 end

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```

2762 Leu Leu Ala Leu Asp Glu Arg Pro Thr Arg Ser Cys Pro Pro Tyr Arg
2763             1060             1065             1070
2765 Arg Gly Leu Ala Ala Thr Thr Asn Ala Ala Ala Arg Pro Glu Gly Ala
2766             1075             1080             1085
2768 Gly Ile Gln Ala Pro Leu Trp Cys Val Thr Arg Gly Ala Val Ala Val
2769             1090             1095             1100
2771 Asp Arg His Glu Ala Leu Lys Ser Pro Leu Gln Ala Gln Thr Trp Gly
E--> 2772 105             1110             1115             1120
2774 Leu Gly Arg Val Ala Ala Leu Glu Ser Pro Gln Ser Trp Gly Gly Leu
2775             1125             1130             1135
2777 Ile Asp Leu Pro Asp Asn Leu Asp Gly Arg Ala Val Ser Ala Leu Leu
2778             1140             1145             1150
2780 Ser Thr Leu Ala Gly Glu Glu Asp Gln Val Ala Val Arg Pro Ala Gly
2781             1155             1160             1165
2783 Val Phe Ala Arg Arg Leu Glu Arg Ile Thr Pro Gly Gly Asp Thr Gly
2784             1170             1175             1180
2786 Asp Arg Trp Ser Thr His Gly Thr Val Leu Val Thr Gly Gly Thr Gly
E--> 2787 185             1190             1195             1200
2789 Ala Leu Gly Ala His Leu Ala His Trp Leu Ala Asp Ala Gly Ala Glu
2790             1205             1210             1215
2792 His Leu Val Leu Thr Gly Arg Arg Gly Pro Gln Ala Pro Gly Ala Pro
2793             1220             1225             1230
2795 Glu Leu Ala Ala Ala Leu Thr Asp Arg Gly Val Lys Val Thr Leu Ala
2796             1235             1240             1245
2798 Ala Cys Asp Ala Ala Asp Arg Asp Ala Leu Ala Ala Val Leu Ala Asp
2799             1250             1255             1260
2801 Ile Pro Pro His Leu Pro Leu Thr Gly Val Val His Ala Ala Gly Val
E--> 2802 265             1270             1275             1280
2804 Leu Asp Asp Gly Val Leu Asp Ala Leu Thr Pro Glu Arg Phe Glu Thr
2805             1285             1290             1295
2807 Val Leu Arg Pro Lys Ala Arg Ala Ala Gln Asn Leu His Glu Leu Thr
2808             1300             1305             1310
2810 Gln Asp Leu Asp Leu Asp His Phe Val Leu Phe Ser Ser Ile Val Gly
2811             1315             1320             1325
2813 Val Leu Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Tyr
2814             1330             1335             1340
2816 Leu Asp Ala Leu Ala Glu His Arg Leu Ala Gln Gly Leu Pro Ala Thr
E--> 2817 345             1350             1355             1360
2819 Ser Val Ser Trp Gly Pro Gly Gln Ala Ala Ala Trp His Asp Ser Asp
2820             1365             1370             1375
2822 Ala Ala Asp Arg Met Ser Arg Asp Gly Leu Leu Pro Met Ala Ala Ala
2823             1380             1385             1390
2825 Pro Arg Arg Arg Pro Ala Pro Ala Leu Ala Gln Gly Met Thr Gln Val
2826             1395             1400             1405
2828 Thr Val Ala Asp Ile Asp Trp Ser Ala Tyr Ala Pro Ala Leu Thr Ala
2829             1410             1415             1420
2831 Val Arg Pro Ser Pro Leu Ile Gly Asp Leu Pro Glu Ala Arg Arg Ala
E--> 2832 425             1430             1435             1440
2834 Leu Gly Pro Ala Glu Gly Pro Arg Arg Glu Arg Ser Pro Leu Arg Asp

```

*same
encl*

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Input Set : N:\jumbos\huge\10018009.raw
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```

2835          1445          1450          1455
2837 Arg Ile Gly Ala Leu Pro Pro Ala Glu Gln Glu Lys Ala Phe Leu Thr
2838          1460          1465          1470
2840 Met Val Arg Glu Glu Ala Ala Arg Val Leu Gly His Pro Ser Pro Asp
2841          1475          1480          1485
2843 Thr Val Asp Ala Gln Arg Ala Phe Arg Glu Gln Gly Phe Asp Ser Leu
2844          1490          1495          1500
2846 Met Ala Val Asp Leu Arg Asn Arg Leu Ser Ala Ala Thr Gly Leu Arg
E--> 2847 505          1510          1515          1520
2849 Leu Pro Ala Thr Leu Leu Phe Asp His Pro Thr Pro Leu Ala Ala
2850          1525          1530          1535
2852 Ala Cys Leu Arg Ser Glu Val Leu Gly Ala Ala Gly Pro Ala Thr Val
2853          1540          1545          1550
2855 Val Gln Ala Ser Thr Ala Ala Leu Asp Glu Pro Val Ala Ile Ile Gly
2856          1555          1560          1565
2858 Met Ala Cys Arg Phe Pro Gly Gly Val His Ser Pro Glu Ala Leu Trp
2859          1570          1575          1580
2861 Arg Leu Leu Ala Glu Gly Gly Asp Ala Ile Thr Pro Met Pro Ala Asp
E--> 2862 585          1590          1595          1600
2864 Arg Gly Trp Asp Leu Asp Arg Leu Tyr His Pro Asp Pro Asp His Gln
2865          1605          1610          1615
2867 Gly Thr Ser Tyr Ala Arg Gly Gly Gly Phe Leu Asp Gly Ala Ala Asp
2868          1620          1625          1630
2870 Phe Asp Ala Asp Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met
2871          1635          1640          1645
2873 Asp Pro Gln Gln Arg Leu Leu Glu Thr Trp Glu Val Leu Glu Gln
2874          1650          1655          1660
2876 Ala Gly Ile Asp Pro Glu Ser Leu Arg Gly Ser Ser Thr Gly Val Phe
E--> 2877 665          1670          1675          1680
2879 Ala Gly Thr Asn Thr Gln Asp Tyr Gly Thr Ala Leu Asp Ala Ala Gln
2880          1685          1690          1695
2882 Asp Glu Ala Gly Gly His Arg Leu Thr Gly Asn Ala Met Ser Val Val
2883          1700          1705          1710
2885 Ser Gly Arg Val Ser Tyr Thr Phe Gly Phe Glu Gly Pro Ala Leu Thr
2886          1715          1720          1725
2888 Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Met Ala Ala
2889          1730          1735          1740
2891 Gln Ala Leu Arg Gln Gly Glu Cys Ser Leu Ala Val Ala Gly Gly Val
E--> 2892 745          1750          1755          1760
2894 Thr Val Met Ala Thr Pro Ser Ser Phe Val Glu Phe Ala Arg Gln Arg
2895          1765          1770          1775
2897 Gly Leu Ala Pro Asp Gly Arg Cys Lys Pro Phe Ala Ala Ala Asp
2898          1780          1785          1790
2900 Gly Thr Gly Trp Ser Glu Gly Val Gly Leu Leu Leu Val Glu Arg Leu
2901          1795          1800          1805
2903 Ser Asp Ala Arg Arg Asn Gly His Gln Val Leu Ala Val Val Arg Gly
2904          1810          1815          1820
2906 Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Ser Ala Pro Ser
E--> 2907 825          1830          1835          1840

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Same

RAW SEQUENCE LISTING

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Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

2909 Gly Pro Ser Gln Gln Arg Val Ile Arg Gln Ala Leu Ala Asn Ala Arg
 2910 1845 1850 1855
 2912 Val Ala Ala Ser Glu Val Asp Ala Val Glu Ala His Gly Thr Gly Thr
 2913 1860 1865 1870
 2915 Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly
 2916 1875 1880 1885
 2918 Gln Glu Arg Pro Leu Leu Leu Gly Ala Val Lys Ser Asn Leu Gly His
 2919 1890 1895 1900
 2921 Thr Gln Ala Ala Ala Gly Val Ala Gly Val Met Lys Met Val Leu Ala
 E--> 2922 905 1910 1915 1920
 2924 Met Arg His Gly Met Leu Pro Arg Thr Leu His Val Asp Glu Pro Thr
 2925 1925 1930 1935
 2927 Gly His Val Asp Trp Thr Ala Gly Ala Val Glu Leu Leu Thr Glu His
 2928 1940 1945 1950
 2930 Thr Asp Trp Pro Glu Thr Gly His Pro Arg Arg Ala Ala Val Ser Ala
 2931 1955 1960 1965
 2933 Phe Gly Ile Ser Gly Thr Asn Ala His Val Val Leu Glu Leu Pro Ala
 2934 1970 1975 1980
 2936 Ala Glu Gln Pro Leu Val Glu Gln Pro Ser Ala Ala Glu Pro Asp Ala
 E--> 2937 985 1990 1995 2000
 2939 Pro Ala Thr Ala Pro Asp Arg Thr Pro Thr Ala Ser Asp Gly Thr Ala
 2940 2005 2010 2015
 2942 Pro Leu Leu Leu Ser Ala Lys Ser Glu Ser Ala Leu Arg Ala Gln Ala
 2943 2020 2025 2030
 2945 Ala Arg Leu His Ser His Leu Glu Arg Asp Pro Ala Leu Arg Leu Thr
 2946 2035 2040 2045
 2948 Asp Ala Ala Tyr Thr Leu Met Thr His Arg Thr Ala Phe Ala His Arg
 2949 2050 2055 2060
 2951 Ala Ala Val Arg Ala Ala Asp His Glu Ala Ala Leu Arg Ala Leu Thr
 E--> 2952 065 2070 2075 2080
 2954 Ala Leu Ala Ala Gly Glu Ala Asp Pro Ala Val Asp Thr Gly Thr Ala
 2955 2085 2090 2095
 2957 His Thr Gly Arg Asp Ala Val Leu Phe Ser Gly Gln Gly Ser Gln Arg
 2958 2100 2105 2110
 2960 Ile Gly Met Gly Arg Glu Leu Ser Gly Arg Tyr Pro Val Phe Ala Glu
 2961 2115 2120 2125
 2963 Ala Phe Asp Thr Val Cys Ala Ala Leu Asp Glu His Leu Asp Arg Pro
 2964 2130 2135 2140
 2966 Leu Arg Asp Val Val Arg Gly Glu Asp Glu Glu Leu Leu Asn Arg Thr
 E--> 2967 145 2150 2155 2160
 2969 Val Tyr Ala Gln Ala Gly Leu Phe Ala Ile Glu Val Ala Leu Phe Arg
 2970 2165 2170 2175
 2972 Leu Val Glu Ser Trp Gly Val Arg Pro His Tyr Val Ala Gly His Ser
 2973 2180 2185 2190
 2975 Val Gly Glu Ile Ala Ala Ala His Val Ala Gly Val Phe Ser Leu Ala
 2976 2195 2200 2205
 2978 Asp Ala Cys Ala Leu Val Ala Ala Arg Gly Arg Leu Met Gln Ala Leu
 2979 2210 2215 2220
 2981 Pro Ala Gly Gly Ala Met Ala Ala Ile Arg Ala Thr Glu Asp Glu Val

same

RAW SEQUENCE LISTING

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Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

```

E--> 2982 225      2230      2235      2240
2984 Leu Pro His Leu Ala Asp Ser Val Ser Ile Ala Ala Val Asn Gly Pro
2985      2245      2250      2255
2987 Ser Ser Val Val Val Ser Gly Ala Glu His Ala Val Leu Ser Ile Ala
2988      2260      2265      2270
2990 Ala His Phe Glu Gly Ala Gly Arg Lys Thr Thr Arg Leu Arg Val Ser
2991      2275      2280      2285
2993 His Ala Phe His Ser Pro Leu Met Asp Pro Met Leu Ala Asp Phe Arg
2994      2290      2295      2300
2996 Ala Val Ala Glu Gly Leu Thr Tyr Gly Glu Pro Glu Leu Ala Val Val
E--> 2997 305      2310      2315      2320
2999 Ser Asn Val Thr Gly Gln Leu Ala Thr Pro Asp Gln Leu Arg Thr Pro
3000      2325      2330      2335
3002 Glu Tyr Trp Val Thr His Val Arg Ala Ala Val Arg Phe Ala Asp Gly
3003      2340      2345      2350
3005 Ile Arg Ala Leu Gly Ala Glu Gly Val Thr Arg Phe Leu Glu Leu Gly
3006      2355      2360      2365
3008 Pro Asp Gly Val Leu Ser Ala Leu Ala Arg Glu Ser Ala Pro Asp Asp
3009      2370      2375      2380
3011 Ala Val Cys Thr Pro Val Leu Arg Lys Asp Arg Ser Glu Ala Ala Thr
E--> 3012 385      2390      2395      2400
3014 Leu Leu Ala Ala Leu Thr His Leu His Val His Gly Thr Glu Ile Asp
3015      2405      2410      2415
3017 Trp Thr Ala Phe Leu Ala Gly Arg Asp Ala His Ala Val Asp Leu Pro
3018      2420      2425      2430
3020 Thr Tyr Ala Phe Gln His Gln Arg Phe Trp Pro Thr Pro Asp His Thr
3021      2435      2440      2445
3023 Arg Thr Gly Asp Leu Gly Ala Val Gly Leu Glu Ala Thr Gly His Pro
3024      2450      2455      2460
3026 Leu Leu Ser Ala Ala Val Glu Leu Pro Asp Gly Glu Gly Leu Leu Phe
E--> 3027 465      2470      2475      2480
3029 Thr Thr Arg Leu Ser Leu Gln Thr His Pro Trp Leu Ala Gly His Val
3030      2485      2490      2495
3032 Val Met Gly Ser Val Leu Leu Pro Gly Thr Ala Phe Ala Glu Leu Ala
3033      2500      2505      2510
3035 Leu Arg Ala Ala Asp Glu Val Gly Cys Asp Arg Val Asp Glu Leu Thr
3036      2515      2520      2525
3038 Leu Ala Ala Pro Leu Val Leu Pro Glu His Gly Gly Val Gln Leu Gln
3039      2530      2535      2540
3041 Leu Arg Val Gly Pro Ala Asp Ala Ser Gly Arg Arg Thr Leu Thr Ala
E--> 3042 545      2550      2555      2560
3044 Arg Ser Arg Ala Glu Gly Asp Gly Asp Arg Pro Trp Val Gln His Ala
3045      2565      2570      2575
3047 Thr Gly Val Leu Ala Glu Gly Glu Ser Thr Pro Glu Pro Gly Tyr Asp
3048      2580      2585      2590
3050 Phe His Thr Glu Ser Trp Pro Pro Ala Asp Ala Ala Pro Val Glu Leu
3051      2595      2600      2605
3053 Ser Gly Leu Tyr Pro Asp Phe Ala Ala His Gly Phe Asp Tyr Gly Pro
3054      2610      2615      2620

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same

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Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

```

3056 His Phe Gln Gly Leu Arg Thr Ala Trp Arg Arg Gly Asp Glu Val Phe
E--> 3057 625 2630 2635 2640
3059 Ala Glu Val Ala Leu Pro Ala Glu Ala Glu Gly Glu Ala Ser Ala Tyr
3060 2645 2650 2655
3062 Gly Leu His Pro Ala Leu Leu Asp Ala Leu His Val Val Ala Phe
3063 2660 2665 2670
3065 Asn Gly Val Asp Arg Gly Val Val Pro Phe Ser Trp Glu Ser Val Ala
3066 2675 2680 2685
3068 Leu His Ala Thr Gly Ala Ser Ala Val Arg Ile Arg Val Val Arg His
3069 2690 2695 2700
3071 Ser Gly Asp Thr Val Ser Val Asp Val Ala Asp Thr Thr Gly Glu Pro
E--> 3072 705 2710 2715 2720
3074 Val Ala Ser Ile Gly Thr Leu Val Leu Arg Ala Val Ser Ala Asp Gln
3075 2725 2730 2735
3077 Leu Ala Gly Gly Ala Asp Pro Ala Val Arg Asp Ala Leu Phe Arg Val
3078 2740 2745 2750
3080 Gln Trp Asn Pro Val Arg Leu Pro Pro Ala Gly Ala Ala Val Thr Val
3081 2755 2760 2765
3083 Ala Thr Leu Gly Ser Leu Ala Gly Ala Pro Phe Asp Gly Tyr Pro Asp
3084 2770 2775 2780
3086 Leu Ala Ser Leu Ala Arg Ser Gly Arg Val Ala Gly Ala Val Leu Val
E--> 3087 785 2790 2795 2800
3089 Pro Val Glu Ala Gly Ala Gly Glu Val Val Ala Asp Asp Val Val Gly
3090 2805 2810 2815
3092 Ala Thr His Ala Thr Ala Ala Arg Ala Leu Asp Leu Ala Arg Ser Trp
3093 2820 2825 2830
3095 Leu Ala Asp Asp Arg Phe Ala Ala Ser Arg Leu Val Phe Val Thr Arg
3096 2835 2840 2845
3098 Gly Ala Val Ser Gly Ala Asp Leu Ala Gly Ala Ala Val Trp Gly Leu
3099 2850 2855 2860
3101 Val Arg Ser Ala Leu Ser Glu His Pro Gly Arg Phe Gly Leu Val Asp
E--> 3102 865 2870 2875 2880
3104 Leu Asp Asp Asp Ala Glu Leu Ala Leu Val Pro Arg Val Leu Ala Ser
3105 2885 2890 2895
3107 Asp Glu Pro Gln Leu Leu Val Arg Gly Gly Glu Val Leu Ala Ala Arg
3108 2900 2905 2910
3110 Leu Ala Arg Ala Gln Ser Ser His Ala Val Thr Trp Asp Pro Ser Gly
3111 2915 2920 2925
3113 Thr Val Leu Val Thr Gly Gly Thr Gly Gly Leu Gly Arg Val Met Ala
3114 2930 2935 2940
3116 Arg His Leu Val Val Glu His Gly Val Arg Asn Leu Leu Leu Val Ser
E--> 3117 945 2950 2955 2960
3119 Arg Arg Gly Pro Ala Ala Glu Gly Ala Glu Glu Leu Val Thr Glu Leu
3120 2965 2970 2975
3122 Arg His Ser Gly Ala Glu Val Ala Val Glu Ala Cys Asp Val Thr Asp
3123 2980 2985 2990
3125 Ala Ala Ala Val Ala Asp Leu Val Ala Arg His Arg Ile Ser Ala Val
3126 2995 3000 3005
3128 Val His Thr Ala Gly Val Leu Asp Asp Gly Val Val Glu Ser Leu Thr

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same

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Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

```

3129      3010      3015      3020
3131 Pro Glu Arg Leu Ser Ala Val Leu Arg Pro Lys Val Asp Ala Ala Trp
E--> 3132 025      3030      3035      3040
3134 Asn Leu His Glu Ala Thr Arg Asp Leu Asp Leu Asp Ala Phe Val Val
3135      3045      3050      3055
3137 Phe Ser Ser Val Ala Gly Thr Ile Gly Ser Pro Gly Gln Ala Asn Tyr
3138      3060      3065      3070
3140 Ala Ala Gly Asn Ala Phe Leu Asp Ala Leu Ala His His Arg Arg Ala
3141      3075      3080      3085
3143 Ala Gly Leu Pro Ala Ala Ser Leu Ala Trp Gly Pro Trp Ser Arg Asp
3144      3090      3095      3100
3146 Gly Gly Met Thr Gly Thr Leu Thr Asp Val Asp Ser Ser Ala Ser Pro
E--> 3147 105      3110      3115      3120
3149 Gly Arg His Ala Arg Thr His Pro Arg Thr Gly Arg Gly Leu Phe Asp
3150      3125      3130      3135
3152 Ala Ala Leu Ala Ala Gly Asp Ala His Leu Leu Pro Val Arg Phe Asp
3153      3140      3145      3150
3155 Trp Ala Ser Leu Arg Ala Gln Gly Glu Val Pro Pro Leu Leu Arg Gly
3156      3155      3160      3165
3158 Leu Ile Arg Thr Arg Ala Arg Arg Ser Ala Val Gly Gly Ser Ala Ala
3159      3170      3175      3180
3161 Ala Ala Gly Leu Val Gly Arg Leu Ser Gly Arg Gly Thr Val Glu Arg
E--> 3162 185      3190      3195      3200
3164 Arg Glu Val Leu Leu Asp Leu Val Arg Ala Gln Ile Ala Val Val Leu
3165      3205      3210      3215
3167 Gly His Ala Asn Pro Glu Thr Ile Glu Ser Thr Arg Val Phe Gln Asp
3168      3220      3225      3230
3170 Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Leu Arg Asn Arg Leu Asn
3171      3235      3240      3245
3173 Asn Ala Thr Gly Leu Arg Leu Ser Ala Thr Ala Val Phe Asp Tyr Pro
3174      3250      3255      3260
3176 Thr Ala Asp Ala Leu Val Asp Phe Leu Leu Asp Glu Leu Phe Gly Ala
E--> 3177 265      3270      3275      3280
3179 Gln Glu Glu Ala Glu Leu Pro Ala Pro Val Pro Ser Pro Ala Gly Ala
3180      3285      3290      3295
3182 Ala Asp Asp Pro Val Val Ile Val Gly Met Ser Cys Arg Tyr Pro Gly
3183      3300      3305      3310
3185 Gly Val Gly Ser Pro Glu Asp Leu Trp Arg Leu Val Ser Glu Gly Val
3186      3315      3320      3325
3188 Asp Ala Val Ser Asp Phe Pro Thr Asp Arg Gly Trp Asp Val Glu Ser
3189      3330      3335      3340
3191 Leu Tyr Ser Pro Asp Pro Glu Ala Leu Gly Thr Ser Tyr Thr Arg Ser
E--> 3192 345      3350      3355      3360
3194 Gly Gly Phe Leu His Glu Ala Ala Glu Phe Asp Pro Asp Phe Phe Gly
3195      3365      3370      3375
3197 Met Ser Pro Arg Glu Ala Leu Ala Thr Asp Ala Gln Gln Arg Leu Leu
3198      3380      3385      3390
3200 Leu Glu Thr Thr Trp Glu Ala Ile Glu Arg Thr Gly Ile Asp Pro Ala
3201      3395      3400      3405

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same

RAW SEQUENCE LISTING
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Input Set : N:\jumbos\huge\10018009.raw
Output Set: N:\CRF3\05212002\J018009.raw

```

3203 Ser Leu Arg Gly Ser Arg Thr Gly Val Phe Ala Gly Val Met Tyr Thr
3204      3410      3415      3420
3206 Asp Tyr Gly Asp Leu Leu Val Gly Asp Gln Phe Glu Gly Tyr Arg Ser
E--> 3207 425      3430      3435      3440
3209 Asn Gly Ser Ala Ala Ser Ile Ala Ser Gly Arg Val Ser Tyr Thr Phe
3210      3445      3450      3455
3212 Gly Phe Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser
3213      3460      3465      3470
3215 Leu Val Ala Leu His Trp Ala Ala Gln Ser Leu Arg Ser Gly Glu Cys
3216      3475      3480      3485
3218 Ser Leu Ala Val Ala Gly Gly Val Thr Val Met Ser Thr Pro Thr Thr
3219      3490      3495      3500
3221 Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ser Ala Asp Gly Arg Cys
E--> 3222 505      3510      3515      3520
3224 Lys Ala Phe Ala Asp Ala Ala Asp Gly Val Gly Trp Gly Glu Gly Val
3225      3525      3530      3535
3227 Gly Met Leu Val Leu Glu Arg Leu Ser Asp Ala Arg Arg Asn Gly His
3228      3540      3545      3550
3230 Arg Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala
3231      3555      3560      3565
3233 Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ala Gln Gln Arg Val Ile
3234      3570      3575      3580
3236 Arg Gln Ala Leu Ala Ser Ala Gly Leu Ser Ala Ala Asp Val Asp Ala
E--> 3237 585      3590      3595      3600
3239 Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala
3240      3605      3610      3615
3242 Gln Ala Leu Leu Ala Thr Tyr Gly Gln Glu Arg Pro Glu Asp Arg Pro
3243      3620      3625      3630
3245 Leu Leu Leu Gly Ser Val Lys Ser Asn Ile Gly His Ala Gln Ala Ala
3246      3635      3640      3645
3248 Ser Gly Val Ala Gly Val Ile Lys Met Val Leu Ala Met Arg His Gly
3249      3650      3655      3660
3251 Val Leu Pro Arg Thr Leu His Val Asp Glu Pro Ser Ser His Val Asp
E--> 3252 665      3670      3675      3680
3254 Trp Ser Ala Gly Ala Val Glu Leu Leu Thr Ser Glu Ala Glu Trp Pro
3255      3685      3690      3695
3257 Gln Gly Glu Gly Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Val Ser
3258      3700      3705      3710
3260 Gly Thr Asn Ala His Val Ile Leu Glu Gln Pro Gly Pro Asp Ala Ala
3261      3715      3720      3725
3263 Asp Ala Ala Pro Asp Ala Thr Val Thr Asp Pro Gly Ala Leu Ala Trp
3264      3730      3735      3740
3266 Val Leu Ser Ala Arg Asn Glu Ala Ala Leu Arg Cys Gln Ala Ala Arg
E--> 3267 745      3750      3755      3760
3269 Leu Leu Ser Leu Val Ala Gly Ser Asp Ala Leu Cys Ala Arg Asp Ile
3270      3765      3770      3775
3272 Gly His Ser Leu Val Thr Gly Arg Ser Ser Phe Ala His Arg Ala Val
3273      3780      3785      3790
3275 Val Trp Gly Gln Asp Arg Asp Ala Leu Val Arg Ala Leu Ser Ala Leu

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same

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Input Set : N:\jumbos\huge\10018009.raw
Output Set: N:\CRF3\05212002\J018009.raw

```

3276          3795          3800          3805
3278 Ala Val Gly Glu Ala Asp Ala Gly Leu Ala Glu Gly Ala Ser Gly Ala
3279          3810          3815          3820
3281 Gly Arg Thr Ala Phe Leu Phe Ser Gly Gln Gly Ser Gln Arg Leu Gly
E--> 3282 825          3830          3835          3840
3284 Met Gly Trp Glu Leu Tyr Ala Arg Tyr Pro Val Phe Ala Asp Ala Phe
3285          3845          3850          3855
3287 Asp Ala Val Cys Ala Ala Leu Asp Glu His Leu Glu Arg Pro Leu Arg
3288          3860          3865          3870
3290 Asp Val Val Trp Gly Glu Asp Ala Glu Leu Leu Asn Gln Thr Ala Tyr
3291          3875          3880          3885
3293 Ala Gln Ala Gly Leu Phe Ala Ile Glu Val Ala Leu Tyr Arg Leu Ala
3294          3890          3895          3900
3296 Glu Ser Trp Gly Met Arg Pro Asp Phe Val Ala Gly His Ser Ile Gly
E--> 3297 905          3910          3915          3920
3299 Glu Val Ala Ala Ala His Val Ser Gly Val Phe Ser Leu Pro Asp Ala
3300          3925          3930          3935
3302 Cys Ala Leu Val Ala Ala Arg Gly Arg Leu Met Gln Gln Leu Pro Ser
3303          3940          3945          3950
3305 Gly Gly Ala Met Met Ala Ile Arg Ala Thr Glu Asp Glu Val Leu Pro
3306          3955          3960          3965
3308 His Leu Ala Glu Gly Val Ser Leu Ala Ala Val Asn Gly Pro Ser Ser
3309          3970          3975          3980
3311 Val Val Ile Ser Gly Ala Glu Asp Ala Val Leu Ala Ile Ala Ala His
E--> 3312 985          3990          3995          4000
3314 Phe Ala Gly Glu Gly Arg Lys Thr Thr Arg Leu Arg Val Ser His Ala
3315          4005          4010          4015
3317 Phe His Ser Pro Leu Met Glu Pro Met Leu Glu Glu Phe Arg Ala Val
3318          4020          4025          4030
3320 Val Thr Arg Leu Ser Phe Gly Thr Pro Thr Ile Pro Val Val Ser Asn
3321          4035          4040          4045
3323 Leu Thr Gly Arg Leu Ala Glu Pro Glu Gln Leu Ala His Ala Asp Tyr
3324          4050          4055          4060
3326 Trp Val Arg His Val Arg Glu Ala Val Arg Phe Ala Asp Gly Ile Gln
E--> 3327 065          4070          4075          4080
3329 Ala Leu Arg Ala Glu Gly Val Thr Arg Phe Leu Glu Leu Gly Pro Asp
3330          4085          4090          4095
3332 Gly Val Leu Ser Ala Met Ala Arg Glu Ser Ala Ser Asp Asp Ala Val
3333          4100          4105          4110
3335 Leu Ala Pro Val Leu Arg Arg Asp Arg Pro Glu Glu Thr Ala Leu Leu
3336          4115          4120          4125
3338 Gly Ala Leu Ala Gln Leu Tyr Val Arg Gly Ala His Val Asp Trp Thr
3339          4130          4135          4140
3341 Val Pro Phe Ala Gly Ser Gly Ala Arg Trp Ala Asp Leu Pro Thr Tyr
E--> 3342 145          4150          4155          4160
3344 Ala Phe Gln His Glu Arg Phe Trp Pro Ser Gly Gly Val Ala Arg Pro
3345          4165          4170          4175
3347 Gly Asp Val Arg Ser Ala Gly Leu Gly Ser Ala Gly His Pro Leu Leu
3348          4180          4185          4190

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same

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Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

```

3350 Gly Ala Ala Val Glu Leu Ala Gly Ser Gly Gly Leu Leu Phe Thr Gly
3351          4195          4200          4205
3353 Arg Leu Ser Val Ser Ser His Pro Trp Leu Ala Asp His Val Val Leu
3354          4210          4215          4220
3356 Gly Ser Val Leu Val Pro Gly Thr Ala Leu Val Glu Leu Val Leu Arg
E--> 3357 225          4230          4235          4240
3359 Ala Ala Asp Glu Ala Gly Cys Asp Leu Leu Glu Glu Leu Thr Leu Ala
3360          4245          4250          4255
3362 Ala Pro Leu Val Leu Pro Ala Ser Gly Ala Ala Val Gln Val Gln Val
3363          4260          4265          4270
3365 Ala Val Gly Glu Pro Asp Glu Ala Gly Arg Arg Pro Val Ser Val His
3366          4275          4280          4285
3368 Ala Arg Glu Gly Glu Gly Pro Trp Thr Leu His Ala Ser Gly Ala Val
3369          4290          4295          4300
3371 Thr Ser Gly Ala Glu Val Pro Pro Phe Asp Ala Thr Val Trp Pro Pro
E--> 3372 305          4310          4315          4320
3374 Lys Gly Ala Glu Pro Val Asp Val Ala Asp Cys Tyr Asp Val Leu Ala
3375          4325          4330          4335
3377 Asp Ala Gly Leu Thr Tyr Gly Pro Ala Phe His Gly Leu Gln Ala Ala
3378          4340          4345          4350
3380 Trp Lys Leu Gly Gly Asp Val Tyr Ala Glu Ala Lys Leu Pro Glu Ser
3381          4355          4360          4365
3383 Thr Asp Gly Asp Ala Tyr Gly Leu His Pro Ala Leu Phe Asp Ala Ala
3384          4370          4375          4380
3386 Leu His Ala Ser Ala Leu Gly Gly Ala Glu Ala Gly Gly Val Pro Phe
E--> 3387 385          4390          4395          4400
3389 Ser Trp Ala Gly Val Ser Leu His Ala Thr Gly Ala Ser His Leu Arg
3390          4405          4410          4415
3392 Val Arg Ile Arg Glu Ala Gly Gly Ala Leu Ser Val Ala Ile Ala Asp
3393          4420          4425          4430
3395 Thr Ser Gly Ala Pro Val Ala Ser Val Glu Ser Leu Val Ile Arg Pro
3396          4435          4440          4445
3398 Leu Ser Ala Gly Gln Val Gln Ala Ala Asp Arg Asp Ala Leu Phe-Lys
3399          4450          4455          4460
3401 Ala Asp Trp Val Pro Val Pro Leu Thr Asp Glu Arg Val Glu Pro Gly
E--> 3402 465          4470          4475          4480
3404 Thr Gly Pro Glu Gly Glu Pro Leu Arg Thr Tyr Ala Asp Leu Asp Ser
3405          4485          4490          4495
3407 Leu Glu Gly Ala Ala Val Pro Gly Thr Val Leu Val Ala Pro Pro Ser
3408          4500          4505          4510
3410 Gly Ala Ala Gly Thr Val Glu Ser Val His Ala Ala Thr Val Trp Ala
3411          4515          4520          4525
3413 Leu Glu Met Val Gln Ala Trp Leu Ala Asp Asp Arg Phe Ala Thr Ser
3414          4530          4535          4540
3416 Arg Leu Val Phe Val Thr Arg Gly Ala Ala Phe Gly Ala Asp Leu Ala
E--> 3417 545          4550          4555          4560
3419 Ala Ala Ala Val Arg Gly Leu Val Arg Ser Ala Gln Ser Glu Asn Pro
3420          4565          4570          4575
3422 Gly Arg Phe Gly Leu Val Asp Met Asp Gly Asp Ala Asp Thr Thr Val

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same

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Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

```

3423          4580          4585          4590
3425 Pro Ala Gln Ala Leu Ala Thr Asp Glu Pro Glu Leu Leu Val Arg Gly
3426          4595          4600          4605
3428 Gly Glu Val Leu Ala Ala Arg Leu Val Arg Ala Gln Ser Ser His Thr
3429          4610          4615          4620
3431 Val Thr Trp Asp Pro Ser Gly Thr Val Leu Ile Thr Gly Gly Thr Gly
E--> 3432 625          4630          4635          4640
3434 Gly Leu Gly Arg Ser Val Ala Arg His Leu Val Ser Glu His Gly Val
3435          4645          4650          4655
3437 Arg Ser Leu Leu Val Ser Arg Arg Gly Pro Ala Ala Glu Gly Ala
3438          4660          4665          4670
3440 Gly Glu Leu Val Ala Glu Leu Arg Gly Ser Gly Ala Glu Val Val Ile
3441          4675          4680          4685
3443 Glu Ala Cys Asp Val Thr Asp Ala Val Ala Val Ala Asp Leu Val Ala
3444          4690          4695          4700
3446 Arg His Arg Ile Ser Ala Val Val His Thr Ala Gly Val Leu Asp Asp
E--> 3447 705          4710          4715          4720
3449 Gly Val Val Glu Ser Leu Thr Pro Glu Arg Leu Ala Val Val Leu Arg
3450          4725          4730          4735
3452 Pro Lys Val Asp Ala Ala Trp Asn Leu His Glu Ala Thr Arg Gly Leu
3453          4740          4745          4750
3455 Asp Leu Asp Ala Phe Val Val Phe Ser Ser Val Ala Gly Thr Phe Gly
3456          4755          4760          4765
3458 Ser Ala Gly Gln Ala Asn Tyr Ala Ala Gly Asn Ala Phe Leu Asp Ala
3459          4770          4775          4780
3461 Leu Ala Tyr His Arg Arg Ala Val Gly Leu Pro Ala Val Ser Leu Ala
E--> 3462 785          4790          4795          4800
3464 Trp Gly Pro Trp Ser Gln Asp Gly Gly Met Thr Gly Thr Leu Ser Asp
3465          4805          4810          4815
3467 Ala Asp Val Gln Arg Ile Ala Arg Gln Gly Met Pro Pro Leu Thr Val
3468          4820          4825          4830
3470 Glu Glu Gly Leu Ala Leu Phe Asp Ala Ala Leu Gly Ser Ala Glu Pro
3471          4835          4840          4845
3473 Met Ala Leu Pro Val Arg Leu Asp Leu Ala Ala Leu Arg Ala Gln Gly
3474          4850          4855          4860
3476 Glu Pro Gln Pro Leu Leu Arg Gly Leu Ile Arg Thr Arg Thr Arg Arg
E--> 3477 865          4870          4875          4880
3479 Ser Gly Ala Ala Ala Ala Ser Gly Ile Ala Gln Arg Leu Ala Gly Leu
3480          4885          4890          4895
3482 Ser Thr Ala Glu Arg Arg Glu Ala Leu Leu Asp Val Val Arg Ala Gln
3483          4900          4905          4910
3485 Ile Ala Thr Val Leu Gly His Ala Gly Pro Glu Thr Ile Ala Pro Asp
3486          4915          4920          4925
3488 Arg Ala Phe Gln Asp Leu Gly Leu Asp Ser Leu Thr Ala Ile Glu Leu
3489          4930          4935          4940
3491 Arg Asn Leu Leu Gly Lys Ala Thr Gly Leu Arg Leu Pro Ala Thr Thr
E--> 3492 945          4950          4955          4960
3494 Val Phe Asp Tyr Pro Thr Val Asp Ala Leu Ala Ala His Leu Leu Asp
3495          4965          4970          4975

```

same

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/018,009

DATE: 05/21/2002
TIME: 15:49:29

Input Set : N:\jumbos\huge\10018009.raw
Output Set: N:\CRF3\05212002\J018009.raw

```

3497 Glu Leu Phe Gly Ala Glu Thr Gly Thr Ala Thr Glu Thr Pro Leu Pro
3498          4980          4985          4990
3500 Val Pro Gly Leu Pro Ser Leu Ala Asp Asp Pro Val Val Ile Val Gly
3501          4995          5000          5005
3503 Met Ser Cys Arg Phe Pro Gly Gly Val Ala Ser Pro Glu Asp Leu Trp
3504    5010          5015          5020
3506 Arg Leu Val Ala Asp Gly Val Asp Ala Val Ser Ala Phe Pro Thr Asp
E--> 3507 025          5030          5035          5040
3509 Arg Gly Trp Glu Ile Asp Asp Thr Tyr Asp Pro Glu Arg Glu Gly Ala
3510          5045          5050          5055
3512 Ile Ala Thr Arg Ser Gly Gly Phe Leu His Asp Ala Ala Glu Phe Asp
3513          5060          5065          5070
3515 Pro Glu Phe Phe Gly Met Ser Pro Arg Glu Ala Leu Thr Thr Asp Ala
3516          5075          5080          5085
3518 Gln Gln Arg Leu Leu Leu Glu Thr Thr Trp Glu Ala Leu Glu Arg Ala
3519    5090          5095          5100
3521 Gly Met Asp Pro Ala Thr Leu Arg Gly Ser Arg Thr Gly Val Phe Ala
E--> 3522 105          5110          5115          5120
3524 Gly Val Met Tyr His Asp Tyr Ser Thr Leu Leu Ser Gly Arg Glu Phe
3525          5125          5130          5135
3527 Glu Gly Tyr Gln Gly Ser Gly Ser Ala Gly Ser Val Ala Ser Gly Arg
3528          5140          5145          5150
3530 Val Ser Tyr Thr Phe Gly Phe Glu Gly Pro Ala Val Thr Val Asp Thr
3531          5155          5160          5165
3533 Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Ala Gln Ser Leu
3534    5170          5175          5180
3536 Arg Ser Gly Glu Cys Ser Leu Ala Leu Ala Gly Gly Val Thr Val Met
E--> 3537 185          5190          5195          5200
3539 Ser Thr Pro Leu Thr Phe Val Glu Phe Ser Arg Gln Gly Gly Leu Ser
3540          5205          5210          5215
3542 Ala Asp Gly Arg Cys Lys Ala Phe Ala Asp Ala Ala Asp Gly Val Gly
3543          5220          5225          5230
3545 Trp Ala Glu Gly Ala Gly Ile Leu Val Leu Glu Arg Leu Ser Asp Ala
3546          5235          5240          5245
3548 Arg Arg Asn Gly His Arg Ile Leu Ala Thr Val Arg Gly Ser Ala Val
3549    5250          5255          5260
3551 Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ala
E--> 3552 265          5270          5275          5280
3554 Gln Gln Arg Val Ile Arg Gln Ala Leu Ala Ser Ala Gly Leu Ser Ala
3555          5285          5290          5295
3557 Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly
3558          5300          5305          5310
3560 Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Glu Arg
3561          5315          5320          5325
3563 Pro Glu Asp Arg Pro Leu Leu Gly Ser Val Lys Ser Asn Ile Gly
3564    5330          5335          5340
3566 His Ala Gln Ala Ala Ser Gly Val Ala Gly Val Ile Lys Met Val Leu
E--> 3567 345          5350          5355          5360
3569 Ala Met Arg His Gly Val Leu Pro Arg Thr Leu His Val Asp Glu Pro

```

same

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/018,009

DATE: 05/21/2002
TIME: 15:49:29

Input Set : N:\jumbos\huge\10018009.raw
Output Set: N:\CRF3\05212002\J018009.raw

```

3570          5365          5370          5375
3572 Ser Ser His Val Asp Trp Ser Ala Gly Ala Val Glu Leu Leu Thr Ser
3573          5380          5385          5390
3575 Glu Ala Glu Trp Pro Gln Gly Glu Gly Pro Arg Arg Ala Gly Val Ser
3576          5395          5400          5405
3578 Ser Phe Gly Ile Ser Gly Thr Asn Ala His Val Ile Leu Glu Gln Pro
3579          5410          5415          5420
3581 Glu Pro Val Ala Ala Glu Thr Glu Ser Ile Thr Pro Asp Thr Ala Pro
E--> 3582 425          5430          5435          5440
3584 Asp Ala Ala Glu Asp Glu Ala Ala Asp Ser Gly Thr Pro Val Pro Ala
3585          5445          5450          5455
3587 Leu Leu Ser Gly Arg Ser Ala Ser Ala Leu Arg Ala Gln Ala Ala Arg
3588          5460          5465          5470
3590 Leu Leu Ser Arg Leu Asp Gly Asp Pro Gly Pro Arg Ile Thr Asp Val
3591          5475          5480          5485
3593 Ala Tyr Ser Leu Ala Thr Gly Arg Ser Ala Phe Pro His Arg Ala Val
3594          5490          5495          5500
3596 Ile Leu Ala Ala Asn Arg Ala Asp Leu Leu His Ser Leu Ser Ala Leu
E--> 3597 505          5510          5515          5520
3599 Ala Glu Gly His Thr Glu Ala Pro Ala Val Val Ala Gln Asp Arg Ala
3600          5525          5530          5535
3602 Arg Ser Gly Lys Leu Ala Phe Leu Phe Ser Gly Gln Gly Ser Gln Arg
3603          5540          5545          5550
3605 Leu Gly Met Gly Arg Glu Leu Tyr Gly Arg Tyr Pro Ala Phe Ala Glu
3606          5555          5560          5565
3608 Ala Leu Asp Ala Val Cys Ala Ala Leu Asp Ala His Leu Asp Arg Pro
3609          5570          5575          5580
3611 Leu Arg Asp Val Ile Trp Gly Glu Asp Ala Glu Leu Leu Asn Arg Thr
E--> 3612 585          5590          5595          5600
3614 Gly Tyr Ala Gln Thr Gly Leu Phe Ala Ile Glu Val Ala Leu Phe Arg
3615          5605          5610          5615
3617 Leu Leu Glu Ser Trp Gly Val Arg Pro Asp His Leu Leu Gly His Ser
3618          5620          5625          5630
3620 Ile Gly Glu Ile Ala Ala Ala His Val Ala Gly Val Leu Ser Leu Pro
3621          5635          5640          5645
3623 Asp Ala Cys Ala Leu Val Ala Ala Arg Gly Arg Leu Met Gln Gln Leu
3624          5650          5655          5660
3626 Pro Ser Gly Gly Ala Met Met Ala Ile Arg Ala Thr Glu Asp Glu Val
E--> 3627 665          5670          5675          5680
3629 Leu Pro His Leu Ala Glu Gly Val Ser Leu Ala Ala Val Asn Gly Pro
3630          5685          5690          5695
3632 Ser Ser Val Val Val Ser Gly Ala Glu Asp Glu Val Leu Ala Leu Ala
3633          5700          5705          5710
3635 Ala His Phe Glu Glu Glu Gly Arg Lys Thr Thr Arg Leu Arg Val Ser
3636          5715          5720          5725
3638 His Ala Phe His Ser Pro Leu Met Glu Pro Met Leu Ala Asp Phe Arg
3639          5730          5735          5740
3641 Ala Val Ala Asp Gly Met Thr Tyr Ala Ala Pro Arg Ile Pro Val Val
E--> 3642 745          5750          5755          5760

```

same

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/018,009

DATE: 05/21/2002

TIME: 15:49:29

Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

3644 Ser Asn Val Thr Gly Arg Pro Ala Thr Ala Glu Glu Leu Cys Cys Ala
 3645 5765 5770 5775
 3647 Glu Tyr Trp Val Gly His Val Arg Glu Ala Val Arg Phe Ala Asp Gly
 3648 5780 5785 5790
 3650 Val Gly Ala Leu Arg Glu Gln Gly Val Thr Thr Phe Leu Glu Leu Gly
 3651 5795 5800 5805
 3653 Pro Asp Gly Ser Leu Ser Ala Leu Ala Ala Glu Ser Ala Ala Asp Asp
 3654 5810 5815 5820
 3656 Ser Val Leu Ala Pro Val Leu Arg Lys Asn Arg Pro Glu Ala Pro Ala
 E--> 3657 825 5830 5835 5840
 3659 Leu Leu Thr Ala Leu Ala Arg Leu His Ala Gln Gly Thr Pro Val Asp
 3660 5845 5850 5855
 3662 Trp Ser Ala Ala Phe Ala Gly Thr Gly Ala Arg Trp Val Asp Leu Pro
 3663 5860 5865 5870
 3665 Thr Tyr Ala Phe Gln His Glu Arg Phe Trp Pro Ser Gly Gly Ala Ala
 3666 5875 5880 5885
 3668 Arg Ala Gly Asp Val Arg Ser Ala Gly Leu Gly Ser Ala Gly His Pro
 3669 5890 5895 5900
 3671 Leu Leu Gly Ala Ala Val Glu Leu Ala Gly Ser Gly Gly Arg Leu Leu
 E--> 3672 905 5910 5915 5920
 3674 Thr Gly Arg Leu Ser Leu Ser Ser His Pro Trp Leu Ala Asp His Val
 3675 5925 5930 5935
 3677 Val Leu Gly Ser Val Leu Val Pro Gly Thr Ala Leu Met Glu Leu Val
 3678 5940 5945 5950
 3680 Leu Arg Ala Ala Asp Glu Val Asp Cys Ala Ala Val Asp Glu Leu Thr
 3681 5955 5960 5965
 3683 Leu Ala Ala Pro Leu Val Leu Pro Ala Ser Gly Ala Ala Ile Gln Val
 3684 5970 5975 5980
 3686 Gln Val Trp Val Gly Glu Pro Asp Glu Ala Gly Arg Arg Pro Val Ser
 E--> 3687 985 5990 5995 6000
 3689 Val His Ala Arg Glu Gly Glu Gly Pro Trp Thr Leu His Ala Asp Gly
 3690 6005 6010 6015
 3692 Ala Leu Ala Pro Ala Ala Glu Thr Val Pro Phe Asp Thr Ala Ile Trp
 3693 6020 6025 6030
 3695 Pro Pro Gln Gly Ala Glu His Leu Asp Ala Ala Gly Cys Tyr Glu Arg
 3696 6035 6040 6045
 3698 Phe Ala Asp Ala Gly Phe Ala Tyr Gly Pro Val Phe Gln Gly Leu Arg
 3699 6050 6055 6060
 3701 Ala Ala Trp Lys Leu Gly Glu Asp Ile Tyr Ala Glu Val Ala Leu Pro
 E--> 3702 065 6070 6075 6080
 3704 Glu Gly Thr Asp Gly Asn Ala Tyr Gly Leu His Pro Ala Leu Phe Asp
 3705 6085 6090 6095
 3707 Ala Ala Leu His Ala Ala Leu Leu Gly Glu Gly Thr Asp Glu Ala
 3708 6100 6105 6110
 3710 Ala Val Pro Phe Ser Trp Asn Gly Val Thr Leu His Ala Thr Gly Ala
 3711 6115 6120 6125
 3713 Ser Arg Val Arg Val Arg Ile Arg Pro Thr Glu Gly Gly Thr Ser Ile
 3714 6130 6135 6140
 3716 Ala Leu Val Asp Thr Ala Gly Ala Pro Val Ala Ser Val Arg Ser Leu

same

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/018,009

DATE: 05/21/2002
TIME: 15:49:29

Input Set : N:\jumbos\huge\10018009.raw
Output Set: N:\CRF3\05212002\J018009.raw

```

E--> 3717 145          6150          6155          6160
3719 Thr Ala Arg Pro Ile Thr Ala Gly Gln Leu Gln Thr Gly Asp Arg Asp
3720          6165          6170          6175
3722 Ser Leu Phe Gln Val Asp Trp Thr Thr Leu His Leu Thr Asp Glu Arg
3723          6180          6185          6190
3725 Ala Asn Ser Leu Ala Leu Leu Gly Lys Asp Thr Glu Gly Ile Leu Asp
3726          6195          6200          6205
3728 Thr Leu Ser Leu Gln Pro His Ala Asp Leu Asp Asp Leu Ala Ala Thr
3729          6210          6215          6220
3731 Gly Val His Asp Thr Val Leu Ala Pro Leu Pro Thr Arg Thr Ala Gly
E--> 3732 225          6230          6235          6240
3734 Thr Val Glu Ser Val His Ala Ala Thr Thr Gly Ala Leu Ala Leu Ile
3735          6245          6250          6255
3737 Arg Ser Trp Leu Ala Asp Asp Arg Phe Ala Ala Ser Arg Leu Val Phe
3738          6260          6265          6270
3740 Val Thr Arg Gly Ala Val Ser Gly Thr Asp Leu Ala Gly Ala Ser Val
3741          6275          6280          6285
3743 Trp Gly Leu Val Arg Ser Ala Leu Leu Glu His Pro Gly Arg Phe Gly
3744          6290          6295          6300
3746 Leu Val Asp Val Asp Val Asp Gln Asp Ala Glu Val Pro Leu Val Pro
E--> 3747 305          6310          6315          6320
3749 Arg Ala Leu Ala Ser Asp Glu Pro Gln Val Leu Val Arg Gly Gly Glu
3750          6325          6330          6335
3752 Val Leu Ala Ala Arg Leu Val Arg Ala Gln Ser Ser Asp Thr Val Thr
3753          6340          6345          6350
3755 Trp Asp Pro Ser Gly Thr Val Leu Ile Thr Gly Gly Thr Gly Gly Leu
3756          6355          6360          6365
3758 Gly Arg Ser Val Ala Arg His Leu Val Ser Glu His Gly Val Arg Ser
3759          6370          6375          6380
3761 Leu Leu Leu Val Ser Arg Arg Gly Pro Ala Ala Glu Gly Val Asp Ala
E--> 3762 385          6390          6395          6400
3764 Leu Val Ala Glu Leu Ala Glu Cys Gly Ala Gln Val Thr Val Glu Ala
3765          6405          6410          6415
3767 Cys Asp Val Thr Asp Ala Val Ala Val Ala Asp Leu Val Ala Arg His
3768          6420          6425          6430
3770 Arg Ile Ser Ala Val Val His Thr Ala Gly Val Leu Asp Asp Gly Val
3771          6435          6440          6445
3773 Val Glu Ser Leu Thr Pro Glu Arg Leu Ser Ala Val Leu Arg Pro Lys
3774          6450          6455          6460
3776 Val Asp Ala Ala Trp Asn Leu His Glu Ala Thr Arg Gly Leu Asp Leu
E--> 3777 465          6470          6475          6480
3779 Asp Ala Phe Val Val Phe Ser Ser Val Ala Gly Thr Phe Gly Ser Ala
3780          6485          6490          6495
3782 Gly Gln Ala Asn Tyr Ala Ala Gly Asn Ala Phe Leu Asp Ala Leu Ala
3783          6500          6505          6510
3785 Tyr His Arg Arg Ala Val Gly Leu Pro Ala Val Ser Leu Ala Trp Gly
3786          6515          6520          6525
3788 Pro Trp Ser Gln Asp Gly Gly Met Thr Gly Thr Leu Ser Asp Ala Asp
3789          6530          6535          6540

```

same

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/018,009

DATE: 05/21/2002

TIME: 15:49:29

Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

```

3791 Val Gln Arg Ile Ala Arg Gln Gly Met Pro Pro Leu Thr Val Glu Glu
E--> 3792 545 6550 6555 6560
3794 Gly Leu Ala Leu Phe Asp Ala Ala Leu Gly Ser Ala Glu Pro Met Ala
3795 6565 6570 6575
3797 Leu Pro Val Arg Leu Asp Leu Ala Ala Leu Arg Ala Gln Gly Glu Pro
3798 6580 6585 6590
3800 Gln Pro Leu Leu Arg Gly Leu Ile Arg Thr Pro Gly Arg Thr Ala
3801 6595 6600 6605
3803 Ala Ala Ala Thr Glu Gly Asp Thr Ala Ala Ala Phe Ala Gly Arg Leu
3804 6610 6615 6620
3806 Thr Gly Leu Ser Ala Ala Glu Gly Arg Glu Val Val Leu Gly Ala Val
E--> 3807 625 6630 6635 6640
3809 Arg Ser Gln Ile Ala Gly Val Leu Gly His Ala Glu Ala Thr Glu Ile
3810 6645 6650 6655
3812 Asp Gln Asp Arg Ala Phe Leu Asp Leu Gly Phe Asp Ser Leu Thr Ala
3813 6660 6665 6670
3815 Val Glu Leu Arg Asn Arg Leu Gly Ala Val Thr Gly Ile Arg Leu Pro
3816 6675 6680 6685
3818 Ala Thr Leu Leu Phe Asp Tyr Pro Thr Pro Ala Glu Leu Val Ala His
3819 6690 6695 6700
3821 Leu His Ala Arg Ile Ala Pro Glu Pro Thr Val Gly Pro Glu Ala Leu
E--> 3822 705 6710 6715 6720
3824 Leu Gly Glu Leu Glu Arg Met Glu Lys Ser Phe Gly Gly Leu Asp Leu
3825 6725 6730 6735
3827 Thr Glu Glu Met His Glu Gln Ile Ala Gly Arg Leu Glu Val Leu Arg
3828 6740 6745 6750
3830 Ala Lys Trp Asp Ala Leu Arg Asp Thr Ala Ala Ala Ala Gly His Asp
3831 6755 6760 6765
3833 Gly Ser Pro Ser Asp Glu Asp Phe Asp Phe Glu Ser Ala Ser Asp Asp
3834 6770 6775 6780
3836 Glu Val Phe Asp Leu Leu Asp Asn Glu Leu Gly Leu Ser
E--> 3837 785 6790 6795
3992 <210> SEQ ID NO: 6
3993 <211> LENGTH: 550
3994 <212> TYPE: PRT
3995 <213> ORGANISM: Streptomyces natalensis
3997 <400> SEQUENCE: 6
3998 Met Phe Glu Asn Gln His Leu Ser Arg Arg Arg Leu Leu Gly Leu Ala
3999 1 5 10 15
4001 Ala Leu Gly Gly Ala Ala Ala Ala Gly Met Thr Thr Ile Thr Ser Ala
4002 20 25 30
4004 Pro His Ala Ala Ala Ala Asp Arg Arg Ser Pro Gln Ala Arg Ser Gly
4005 35 40 45
4007 Ser Phe Val Pro Ala Val Val Ile Gly Thr Gly Tyr Gly Ala Ala Val
4008 50 55 60
4010 Ser Ala Leu Arg Leu Gly Glu Ala Gly Ile Pro Thr Leu Met Leu Glu
4011 65 70 75 80
4013 Met Gly Gln Leu Trp Asn Lys Pro Ala Asp Asp Gly Asn Val Phe Cys
4014 85 90 95

```

*same**← last amino acid*

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/018,009

DATE: 05/21/2002

TIME: 15:49:29

Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

```

4016 Gly Met Leu Ser Pro Asp Arg Arg Ser Ser Trp Phe Lys Ser Arg Thr
4017              100              105              110
4019 Glu Ala Pro Leu Gly Ser Phe Leu Trp Leu Asp Val Ile Asn Arg Asp
4020              115              120              125
4022 Ile Asp Pro Tyr Ala Gly Val Leu Asp Lys Val His Phe Asp Gln Met
4023              130              135              140
4025 Ser Val Tyr Val Gly Arg Gly Val Gly Gly Gly Ser Leu Val Asn Gly
4026 145              150              155              160
4028 Gly Met Ala Val Val Pro Lys Arg Ser Tyr Phe Glu Glu Val Leu Pro
4029              165              170              175
4031 Arg Val Asp Ala Ala Glu Met Tyr Asp Arg Tyr Phe Pro Arg Ala Asn
4032              180              185              190
4034 Ser Met Leu Lys Val Asn His Ile Asp Lys Gly Trp Phe Glu Glu Thr
4035              195              200              205
4037 Glu Trp Tyr Lys Phe Ala Arg Val Ser Arg Glu Gln Ala Gly Lys Ala
4038              210              215              220
4040 Gly Leu Gly Thr Thr Phe Val Pro Asn Val Tyr Asp Phe Asp Tyr Met
4041 225              230              235              240
4043 Arg Arg Glu Ala Asn Gly Glu Ser Pro Lys Ser Ala Leu Ala Thr Glu
4044              245              250              255
4046 Val Ile Tyr Gly Asn Asn His Gly Lys Gln Ser Leu Asp Lys Thr Tyr
4047              260              265              270
4049 Leu Ala Ala Ala Leu Gly Thr Gly Lys Val Thr Ile Glu Thr Leu His
4050              275              280              285
4052 Gln Val Arg Ala Ile His Gln Gln Pro Asp Gly Ser Tyr Val Leu Ser
4053              290              295              300
4055 Val Asp Gln Ile Asp Thr Ala Gly Gln Thr Val Ala His Lys Glu Ile
4056 305              310              315              320
4058 Ser Cys Arg His Leu Phe Leu Gly Ala Gly Ser Leu Gly Ser Thr Glu
4059              325              330              335
4061 Leu Leu Val Arg Ala Arg Asp Thr Gly Ala Leu Pro Asp Leu Asn Ala
4062              340              345              350
4064 Glu Val Gly Ala Gly Trp Gly Pro Asn Gly Asn Ile Met Thr Gly Arg
4065              355              360              365
4067 Ala Asn His Val Trp Asn Pro Thr Gly Ala His Gln Ser Ser Ile Pro
4068              370              375              380
4070 Ala Leu Gly Ile Asp Asp Trp Asn Asn Pro Thr Ala Pro Val Phe Ala
4071 385              390              395              400
4073 Glu Ile Ala Pro Met Pro Ala Gly Leu Glu Thr Trp Val Ser Leu Tyr
4074              405              410              415
4076 Leu Ala Ile Thr Lys Asn Pro Glu Arg Gly Thr Phe Val Tyr Asp Lys
4077              420              425              430
4079 Ala Thr Asp Arg Ala Ala Leu Arg Trp Thr Arg Asp Gln Asn Thr Pro
4080              435              440              445
4082 Ala Val Asn Ala Ala Arg Ser Leu Phe Asp Arg Ile Asn Lys Ala Asn
4083              450              455              460
4085 Gly Thr Met Tyr Arg Tyr Asp Leu Phe Gly Pro Gln Leu Lys Asn Phe
4086 465              470              475              480
4088 Ser Asp Asp Phe Cys Tyr His Pro Leu Gly Gly Cys Val Leu Gly Lys

```


RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/018,009

DATE: 05/21/2002

TIME: 15:49:29

Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

```

4089          485          490          495
4091 Ala Thr Asp Gly Tyr Gly Arg Val Ala Gly Tyr His Asn Leu Tyr Val
4092          500          505          510
4094 Thr Asp Gly Ala Leu Ile Pro Gly Ser Ile Gly Val Asn Pro Phe Val
4095          515          520          525
4097 Thr Ile Thr Ala Leu Ala Glu Arg Asn Ile Glu Arg Ile Ile Ala Glu
4098          530          535          540
4100 Asp Val Lys Ala Ala
E--> 4101 545          550 ←
4216 <210> SEQ ID NO: 8
4217 <211> LENGTH: (399) 398 (p.26)
4218 <212> TYPE: PRT
4219 <213> ORGANISM: Streptomyces natalensis
4221 <400> SEQUENCE: 8
4222 Met Thr Tyr Thr Asp Pro Ala Ala Pro Glu Thr Asp Pro Pro Ala Val
4223 1          5          10          15
4225 Asp Phe Pro Gln Arg Lys Pro Gly Val Pro Phe Pro Pro Pro Asp Tyr
4226          20          25          30
4228 Ala Asp Tyr Arg Asp Arg Lys Gly Leu Val Leu Ser Gln Leu Ser Asp
4229          35          40          45
4231 Gly Lys Arg Val Trp Leu Val Thr Arg His Glu Asp Val Arg Ala Val
4232          50          55          60
4234 Leu Thr Ser Pro Ser Ile Ser Ser Asn Pro Glu His Lys Gly Phe Pro
4235 65          70          75          80
4237 Asn Val Gly Asn Leu Gly Val Pro Lys Gln Asp Gln Ile Pro Gly Trp
4238          85          90          95
4240 Phe Val Gly Met Asp Ser Pro Glu His Asp Arg Phe Arg Lys Ala Leu
4241          100          105          110
4243 Ile Pro Glu Phe Thr Val Arg Arg Val Arg Ala Met Lys Pro Ala Ile
4244          115          120          125
4246 Glu Arg Thr Val Asp Ala Gln Leu Asp Ala Met Leu Ala Ala Gly Asn
4247          130          135          140
4249 Thr Ala Asp Leu Val Ala Asp Phe Ala Leu Pro Ile Pro Ser Leu Val
4250 145          150          155          160
4252 Ile Ser Ala Leu Leu Gly Val Pro Pro Ala Asp Arg Glu Phe Phe Glu
4253          165          170          175
4255 Ser Arg Thr Arg Val Leu Val Ser Leu Arg Ser Ser Thr Asp Asp Asp
4256          180          185          190
4258 Arg Met Ala Ala Ala Lys Asp Leu Leu Arg Tyr Ile Asn Arg Leu Val
4259          195          200          205
4261 Glu Ile Lys Gln Lys Trp Gly Gly Asp Asp Leu Ile Thr Arg Leu Leu
4262          210          215          220
4264 Ala Thr Gly Ala Ile Ala Pro His Glu Met Ser Gly Val Leu Met Leu
4265 225          230          235          240
4267 Leu Leu Ile Ala Gly His Glu Thr Thr Ala Asn Asn Ile Ala Leu Gly
4268          245          250          255
4270 Val Val Thr Leu Leu Ala Asn Pro Gln Trp Ile Gly Asp Asp Arg Ala
4271          260          265          270
4273 Val Glu Glu Thr Leu Arg Phe His Ser Val Ala Asp Leu Val Ser Leu

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/018,009

DATE: 05/21/2002

TIME: 15:49:29

Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

```

4274          275          280          285
4276 Arg Val Ala Val Gln Asp Val Glu Ile Ala Gly Gln Leu Ile Lys Ala
4277          290          295          300
4279 Gly Glu Gly Ile Val Pro Leu Val Ala Ala Ala Asn His Asp Glu Asn
4280 305          310          315          320
4282 Ala Phe Glu Cys Pro His Ala Phe Asp Pro Ser Arg Ser Ala Arg His
4283          325          330          335
4285 His Val Ala Phe Gly Tyr Gly Val His Gln Cys Leu Gly Gln Asn Leu
4286          340          345          350
4288 Val Arg Ile Glu Met Glu Val Ala Tyr Arg Lys Leu Phe Glu Arg Ile
4289          355          360          365
4291 Pro Asn Leu Glu Leu Ala Val Pro Thr Asp Gly Leu Asp Ile Lys Tyr
4292          370          375          380
4294 Asp Gly Val Leu Tyr Gly Leu Asn Glu Leu Pro Val Arg Trp
E--> 4295 385          390          395
4410 <210> SEQ ID NO: 10
4411 <211> LENGTH: 398 (p. 27)
4412 <212> TYPE: PRT
4413 <213> ORGANISM: Streptomyces natalensis
4415 <400> SEQUENCE: 10
4416 Met Thr Ala Ala Ser His Asp Leu Pro Cys Leu Asn Leu Glu Pro Pro
4417 1          5          10          15
4419 Lys Met Leu Lys Leu Ser Pro Leu Leu Arg Ala Leu Gln Asp Arg Gly
4420          20          25          30
4422 Pro Ile His Arg Val Arg Thr Pro Ala Gly Asp Glu Ala Trp Leu Val
4423          35          40          45
4425 Thr Arg His Ala Glu Leu Lys Gln Leu Leu His Asp Glu Arg Ile Gly
4426          50          55          60
4428 Arg Thr His Pro Asp Pro Pro Ser Ala Ala Gln Tyr Val Arg Ser Pro
4429 65          70          75          80
4431 Phe Leu Asp Leu Leu Ile Ser Asp Ala Asp Ala Glu Ser Gly Arg Arg
4432          85          90          95
4434 Gln His Ala Glu Thr Arg Arg Leu Leu Thr Pro Leu Phe Ser Ala Arg
4435          100          105          110
4437 Arg Val Leu Glu Met Gln Pro Lys Val Glu Glu Ala Ala Asp Thr Leu
4438          115          120          125
4440 Leu Asp Ala Phe Ile Ala Gln Gly Pro Pro Gly Asp Leu His Gly Glu
4441          130          135          140
4443 Leu Thr Val Pro Phe Ala Leu Thr Val Leu Cys Glu Val Ile Gly Val
4444 145          150          155          160
4446 Pro Pro Gln Arg Arg Ala Glu Leu Thr Thr Leu Leu Ala Gly Ile Ala
4447          165          170          175
4449 Lys Leu Asp Asp Arg Glu Gly Ala Val Arg Ala Gln Asp Asp Leu Phe
4450          180          185          190
4452 Gly Tyr Val Ala Gly Leu Val Glu His Lys Arg Ala Glu Pro Gly Pro
4453          195          200          205
4455 Asp Ile Ser Arg Leu Asn Asp Gly Glu Leu Thr Glu Asp Arg Val
4456          210          215          220
4458 Ala His Leu Ala Met Gly Leu Leu Phe Ala Gly Leu Asp Ser Val Ala

```

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/018,009

DATE: 05/21/2002

TIME: 15:49:29

Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

```

4459 225                230                235                240
4461 Ser Ile Met Asp Asn Gly Val Val Leu Leu Ala Ala His Pro Asp Gln
4462                245                250                255
4464 Arg Ala Ala Ala Leu Ala Asp Pro Asp Val Met Ala Arg Ala Val Glu
4465                260                265                270
4467 Glu Val Leu Arg Thr Ala Arg Ala Gly Gly Ser Val Leu Pro Pro Arg
4468                275                280                285
4470 Tyr Ala Ser Glu Asp Met Glu Phe Gly Gly Val Thr Ile Arg Ala Gly
4471                290                295                300
4473 Asp Leu Val Leu Phe Asp Leu Gly Leu Pro Asn Phe Asp Glu Arg Ala
4474 305                310                315                320
4476 Phe Thr Gly Pro Glu Glu Phe Asp Ala Ala Arg Thr Pro Asn Pro His
4477                325                330                335
4479 Leu Thr Phe Gly His Gly Ile Trp His Cys Ile Gly Ala Pro Leu Ala
4480                340                345                350
4482 Arg Leu Glu Leu Arg Thr Met Phe Thr Lys Leu Phe Thr Arg Leu Pro
4483                355                360                365
4485 Glu Leu Arg Pro Glu Leu Pro Val Glu Gln Leu Arg Leu Lys Glu Gly
4486                370                375                380
4488 Gln Leu Ser Gly Gly Phe Ala Glu Leu Arg Val Val Trp ←
E--> 4489 385                390                395
4532 <210> SEQ ID NO: 14
4533 <211> LENGTH: 20
4534 <212> TYPE: DNA
4535 <213> ORGANISM: Artificial Sequence
4537 <220> FEATURE:
4538 <223> OTHER INFORMATION: Description of Artificial Sequence: Reverse primer ORF1
4540 <400> SEQUENCE: 14
4541 gcatgagcgt gggaattccg                20
E--> 4553 50

```

delete

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/018,009

DATE: 05/21/2002

TIME: 15:49:30

Input Set : N:\jumbos\huge\10018009.raw

Output Set: N:\CRF3\05212002\J018009.raw

L:10 M:270 C: Current Application Number differs, Replaced Application Number
L:11 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:691 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:2
M:332 Repeated in SeqNo=2
L:844 M:252 E: No. of Seq. differs, <211> LENGTH:Input:1848 Found:1847 SEQ:2
L:2757 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:4
M:332 Repeated in SeqNo=4
L:3837 M:252 E: No. of Seq. differs, <211> LENGTH:Input:6798 Found:6797 SEQ:4
L:3989 M:336 W: Invalid Amino Acid Number in Coding Region, SEQ ID:5
L:4101 M:332 E: (32) Invalid/Missing Amino Acid Numbering, SEQ ID:6
L:4101 M:252 E: No. of Seq. differs, <211> LENGTH:Input:550 Found:549 SEQ:6
L:4295 M:252 E: No. of Seq. differs, <211> LENGTH:Input:399 Found:398 SEQ:8
L:4489 M:252 E: No. of Seq. differs, <211> LENGTH:Input:398 Found:397 SEQ:10
L:4553 M:254 E: No. of Bases conflict, this line has no nucleotides.